U.S. Fish & Wildlife Service

Oil and Nature

Oil –when it heats our homes and powers our vehicles, it is a necessity. When it spills into our waters and coats our shores, it becomes a problem.

Oil spills along coasts affect many parts of the environment, including important coastal habitats and the wildlife that depend on them. Sea birds, shellfish, fish, waterfowl and marine mammals are all affected by oil in the environment.

Major oil spills most commonly involve oils shipped in large quantities at sea, such as crude petroleum, No. 1 and No. 2 fuel oils, diesel oil, Bunker C oil, kerosene, and jet fuel. Oils are compounds — complex mixtures that vary widely in composition.

There are many different types of oils, and oils behave differently in spills. Therefore, the response to a spill varies, depending on the type of oil and quantity released.

Most oil has a density less than water, so it floats. The natural tendency of oil is to spread in a thin layer on the surface of the water as a sheen or film. Such films are extremely difficult to recover and do not remain for long periods; however they do represent a continued threat to fish and wildlife, particularly nesting birds. Under turbulent conditions, oil is more likely to disperse into the upper layers of the water.

Oil changes rapidly once it is spilled into water. These changes are enhanced by the processes of evaporation, dilution and emulsification (when water mixes with the oil). Some changes help dissipate spilled oil, but others can make it linger in the water, on the bottom, or on the shore. Evaporation tends to remove the more toxic components and reduces the toxicity of spilled oil. Emulsification, on the other hand, can slow degradation of spilled oil.

Ultimately, the more toxic elements of oil products spilled in marine, estuarine or freshwater environments are broken down. Exposure to air, sunlight, wave and tidal action, and certain microscopic organisms degrades and/or disperses oil. The rate of degradation and dispersion depends on many factors, such as the type of oil, weather, water temperature, and the type of shoreline and bottom (such as sandy beach or rocky shore).

Spill response teams of federal, state, and local agencies, organizations and industry representatives have prepared contingency plans for oil spill emergencies. The teams swing into action using the plans when a spill comes.

The U.S. Fish and Wildlife Service is part of the spill response team, with responsibility for managing and protecting our living environment. Migratory birds, fish, shellfish, marine mammals and aquatic reptiles all depend on these coastal habitats.

For more information, contact:

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